

Germanate gate dielectrics for semiconductor devices

ABSTRACT OF THE INVENTION

A structure, and method of fabrication, for high performance semiconductor field effect devices is disclosed. These devices are having a gate dielectric containing a germanate material. In representative embodiments the gate dielectric is essentially a layer of a germanate material. The chemical composition of such materials is $\text{Me}_z\text{Ge}_x\text{O}_y$, where Me stands for a metal with high ion polarizability, and x, y, and z are non-zero integers. Such a gate dielectric is advantageous, from the point of view of dielectric constant, barrier height, carrier mobility, thermal stability, and interface stability.